TRANSACTIONS

OF THE

American Society of Civil Engineers.

INDEX.

VOLUME LII.

JUNE, 1904.

SUBJECT INDEX, PAGE 562.

AUTHOR INDEX, PAGE 565.

Titles of papers are in quotation marks when given with the author's name.

VOLUME LII.

SUBJECT INDEX.

AGRICULTURE.

"South African Irrigation." Francis Robert Johnson. (With Discussion.) 1.

BREAKWATERS.

"The Breakwater at Buffalo, New York." Emile Low. 73. Discussion: Thomas D. Pitts, William T. Lyle, D. E. Hughes, G. H. Raymond and George E. Fell, 198.

BRIDGES.

"The Substructure of Marsh River Bridge." Herbert J. Wild. (With Discussion.) 451.

CONCRETE.

— used in Buffalo Breakwater. 94 *et seq.*

DOCKS.

"Dock Improvements at Liverpool." George Cecil Kenyon. 36. Discussion: Alfred Noble, L. J. Le Conte and Emile Low, 65.

DOMES.

"Theory of the Spherical Dome with a Homogeneous Surface, and of the Framed Dome; also Notes on the Construction of Masonry and Metal — ." E. Schmitt. 262. Discussion: Irving P. Church and H. H. Wadsworth, 309.

DREDGING.

"A Desirable Method of — Channels through River Bars." S. P. Maximoff. 215. Discussion: Rudolph Hering, William W. Harts, E. L. Corthell, A. W. Robinson, L. J. Le Conte, F. B. Maltby, William Gerig and F. H. Hilliard, 238.

EXCAVATION.

"Freezing as an Aid to — in Unstable Material." James H. Brace. (With Discussion.) 365.

FOUNDATIONS.

"The Substructure of Marsh River Bridge." Herbert J. Wild. 451. Discussion: George B. Francis, 465.

FREEZING PROCESS.

"Freezing as an Aid to Excavation in Unstable Material." James H. Brace. 365. Discussion: George E. Thomas, D. E. Moran, E. L. Abbott, T. Kennard Thomson, Werner Boecklin, H. J. Campbell, A. Gobert and Charles Sooysmith, 437.

GRADES.

"The Location of the Knoxville, La Follette and Jellico Railroad, of the Louisville and Nashville System." W. D. Taylor. (With Discussion.) 467.

HARBORS.

"The Breakwater at Buffalo, New York." Emile Low. (With Discussion.) 73.

IRRIGATION.

"South African — ." Francis Robert Johnson. 1. Discussion: Augustine W. Wright and L. J. Le Conte, 27.

MEMOIRS OF DECEASED MEMBERS.

Bogart, James Peter. 545.
Campbell, Charles Edward Henry. 547.
Cunningham, Paul Davis. 556.
Reed, William Ward. 558.
Smith, Benjamin Burgh. 550.
Taylor, Selwyn Mellon. 552.

RAILROADS.

"Method Used by the Railroad Commission, of Texas, under the Stock and Bond Law, in Valuing Railroad Properties." R. A. Thompson. 328. Discussion: E. L. Corthell, F. Lavis, W. H. Coverdale and W. D. Taylor, 346.

"The Location of the Knoxville, La Follette and Jellico Railroad, of the Louisville and Nashville System." W. D. Taylor. 467. Discussion: Emile Low, William P. Watson, E. J. Beard, Walter Watson, William G. Raymond, F. Lavis, W. H. Coverdale, Harvey Linton and W. T. Forsythe, 490.

RAINFALL.

"South African Irrigation." Francis Robert Johnson. (With Discussion.) 1.

RIVERS.

"A Desirable Method of Dredging Channels through River Bars." S. P. Maximoff. (With Discussion.) 215.

SHAFT SINKING.

"Freezing as an Aid to Excavation in Unstable Material." James H. Brace. (With Discussion.) 365.

SURVEYING.

"The Location of the Knoxville, La Follette and Jellico Railroad, of the Louisville and Nashville System." W. D. Taylor. (With Discussion.) 467.

TRANSPORTATION.

— on Russian rivers. 215.

AUTHOR INDEX.

ABBOTT, E. L.
Freezing as an aid to excavation. 442.

BEARD, E. J.
Railroad location. 505.

BOECKLIN, WERNER.
Freezing as an aid to excavation. 443.

BOGART, JAMES PETER.
Memoir of. 545.

BRACE, JAMES H.
"Freezing as an Aid to Excavation in Unstable Material." 365.

CAMPBELL, CHARLES EDWARD HENRY.
Memoir of. 547.

CAMPBELL, H. J.
Freezing as an aid to excavation. 444.

CHURCH, IRVING P.
Spherical and framed domes. 309.

CORTHELL, E. L.
Dredging river channels. 240.
Valuation of railroad properties. 346.

COVERDALE, W. H.
Railroad location. 521.
Valuation of railroad properties. 349.

CUNNINGHAM, PAUL DAVIS.
Memoir of. 556.

FELL, GEORGE E.
Buffalo Breakwater. 205.

FORSYTHE, W. T.
Railroad location. 527.

FRANCIS, GEORGE B.
Substructure of Marsh River Bridge. 465.

GERIG, WILLIAM
Dredging river channels. 252.

GOBERT, A.
Freezing as an aid to excavation. 446.

HARTS, WILLIAM W.
Dredging river channels. 239.

HERING, RUDOLPH.
Dredging river channels. 238.

HILLIARD, F. H.
Dredging river channels. 254.

HUGHES, D. E.
Buffalo Breakwater. 202.

JOHNSON, FRANCIS ROBERT.
"South African Irrigation." 1.

KENYON, GEORGE CECIL.
"Dock Improvements at Liverpool." 36.

LAVIS, F.
Railroad location. 519.
Valuation of railroad properties. 348.

LE CONTE, L. J.
Dredging river channels. 249.
Liverpool dock improvements. 66.
South African irrigation. 30.

LINTON, HARVEY.
Railroad location. 526.

LOW, EMILE.
Liverpool dock improvements. 67.
Railroad location. 490.
"The Breakwater at Buffalo, New York." 73.

LYLE, WILLIAM T.
Buffalo Breakwater. 199.

MALTBY, F. B.
Dredging river channels. 250.

MAXIMOFF, S. P.
"A Desirable Method of Dredging Channels through River Bars." 215.

MORAN, D. E.
Freezing as an aid to excavation. 438.

NOBLE, ALFRED.
Liverpool dock improvements. 65.

PITTS, THOMAS D.
Buffalo Breakwater. 198.

RAYMOND, G. H.
Buffalo Breakwater. 203.

RAYMOND, WILLIAM G.
Railroad location. 517.

REED, WILLIAM WARD.
Memoir of. 558.

ROBINSON, A. W.
Dredging river channels. 247.

SCHMITT, E.
"Theory of the Spherical Dome with a Homogeneous Surface, and of the Framed Dome; also Notes on the Construction of Masonry and Metal Domes." 262.

SMITH, BENJAMIN BURGH.
Memoir of. 550.

SOOYSMITH, CHARLES.
Freezing as an aid to excavation. 447.

TAYLOR, SELWYN MELLON.
Memoir of. 552.

TAYLOR, W. D.
"The Location of the Knoxville, La Follette and Jellico Railroad, of the Louisville and Nashville System." 467.
Valuation of railroad properties. 353.

THOMAS, GEORGE E.
Freezing as an aid to excavation. 437.

THOMPSON, R. A.
"Method Used by the Railroad Commission, of Texas, under the Stock and Bond Law, in Valuing Railroad Properties." 328.

THOMSON, T. KENNARD.
Freezing as an aid to excavation. 442.

WADSWORTH, H. H.
Spherical and framed domes. 317.

WATSON, WALTER.
Railroad location. 510.

WATSON, WILLIAM P.
Railroad location. 497.

WILD, HERBERT J.
"The Substructure of Marsh River Bridge." 451.

WRIGHT, AUGUSTINE W.
South African irrigation. 27.